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INSTANT MESSAGING WITH VOICE CONFERENCE FEATURE

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BACKGROUND OF THE INVENTIONTechnical Field

This invention relates generally to Internet-based communication systems, and more particularly to text-based Internet communications system such as instant messaging and on-line chat.

Description of the Related Art

Text-based Internet communication systems such as instant messaging and chat over a data communications link have become increasingly popular due to the substantially real time nature of the communication, low cost, and simplicity of use. The instant messaging or chat (IM/chat) client typically has a message text window in which an incoming text-based instant message (IM) can be presented to an end user. IMs that are sent by the end user through the IM/chat client also can appear in the message text window.

IM/chat systems work well for many communications, but there are times when clients would prefer voice communications. For example, on occasion the contents or subject matter of an IM/chat session can give rise to a desire for voice communications. In such instances, it is usually necessary to terminate the IM/chat session, drop the data communications link, and establish a voice communications link through known methods such as conventional telephony over the publically switched telephone network (PSTN). In such instances, the spontaneity of the conversation is lost, and details of the conversation can be forgotten. The voice communications link sometimes cannot be established, in which case all communications, both data and voice, are terminated. In other instances, the extra steps necessary to establish a voice communications link impedes some from establishing such a link even when a voice link can be necessary or desirable.

Conventional IM/chat systems also can support the exchange of attachments. Attachments are electronic files such as images, documents, or binary objects which can be attached to an IM and transmitted therewith from a sender to a recipient.

5 Attachments can be embedded in a labeled section of an IM such that an IM/chat client processing the IM can identify the presence of an attachment and can decode the contents of the attachment so that the attachment can be further processed by the recipient. Hence, attachments can enhance the utility of exchanging IMs and can provide a supplemental medium for communicating ideas between participants in an IM/chat session.

10 Still, IM and IM attachments are not always an adequate replacement for live voice conversations between IM/chat session participants, particularly where extensive interaction between the participants is necessary or desirable. In some instances, live voice conversations are necessary to explain or discuss the message text included in the IM, attached documents, or audio/visual files. Moreover, a telephone sometimes is not available to the participants, or the use of a telephone requires lengthy dialing procedures which interrupt the spontaneity of the communication. Sometimes telephone access by the participants requires that at least one of the participants terminate an on-line connection to the Internet, which further can disrupt the process of discussing the contents of an IM.

20 The aforementioned difficulties further can be exacerbated when more than two parties need to be involved within a given IM communication chain. Moreover, inclusion of more than two parties within an IM/chat session assumes that each party's IM/chat client has the capability of handling IM/chat sessions with more than two other IM/chat clients simultaneously and within a single text window. If so, though the sending party can be identified easily, it can be difficult to determine the party to which a particular IM is directed. If an IM client only supports two-way IM communications, the parties must initiate multiple two-way IM sessions. In that case, IMs can be sent in a serial fashion from one party to the next, resulting in duplicate information being transmitted to each party within the IM chain. This redundant transmission of data can result in unnecessary communication delays between the parties. For example, the content of an IM can be retyped and re-sent to several different parties before ultimately reaching the proper party.

SUMMARY OF THE INVENTION

The present invention provides an instant messaging or chat (IM/chat) communications method and system for processing an instant message (IM) which has been configured in accordance with the inventive arrangements. A voice conference identifier can be included within the IM. The voice conference identifier can include a voice conference call list specifying conference call nodes. A recipient node of the IM can detect the voice conference identifier in the IM, and in addition to displaying message text contained in the message, can display one or more selectable icons. Responsive to the selection of one or more of the icons, a voice communications link can be established between selected conference call nodes. The voice communications link can be a Voice over IP (VoIP) based voice communications link over the computer communications network or a telephony-based voice communications link over a public switched telephone network (PSTN).

One aspect of the present invention can include an IM/chat communication method including inserting in an IM a voice conference identifier comprising a voice conference call list identifying conference call nodes. The voice conference call list can specify telephone numbers or IP addresses for the identified conference call nodes. The IM can be transmitted to a recipient at a recipient node, wherein responsive to the recipient selecting the voice conference identifier, a voice conference call between selected ones of the identified conference call nodes can be established. Notably, the conference call can be established using VoIP based voice communications links or telephony-based voice communications links over the PSTN.

A selectable symbol for initiating the voice conference call with selected ones of the identified conference call nodes also can be inserted in the IM. Alternatively, a plurality of selectable symbols can be inserted in the IM. In that case, each symbol can initiate a voice communications link with a selected one of the identified conference call nodes. Additionally, computer program code can be embedded in the IM. The computer program code can be configured to establish a plurality of voice

communications links between the selected ones of the identified conference call nodes thereby establishing the conference call.

Another aspect of the invention can include an IM/chat communication method including detecting a voice conference identifier having a voice conference call list identifying conference call nodes in an IM received by a recipient at a recipient node. The voice conference call list can specify telephone numbers or IP addresses for the identified conference call nodes. Responsive to detecting the voice conference identifier, at least one selectable icon can be displayed. Additionally, responsive to a selection of the at least one selectable icon, a voice conference call between selected ones of the identified conference call nodes can be established.

For example, a single icon can be displayed wherein the voice conference call between the selected ones of the identified conference call nodes can be established responsive to the selection of the single icon. Alternatively, a plurality of icons can be displayed. In that case, each icon can correspond to one of the voice conference call nodes. A voice communications link with the selected ones of the conference call nodes can be established responsive to selection of corresponding ones of the plurality of icons.

The establishing step can include extracting from the IM embedded computer program code configured to establish the voice conference call between the selected ones of the identified conference call nodes. Responsive to the selection of the at least one icon, the embedded computer program code can be executed in order to establish the voice conference call. In addition, responsive to the selection of the at least one icon, a telephone number or an IP address for the selected ones of the identified conference call nodes can be determined based on the voice conference call list. Regardless, the voice conference call can be established using VoIP based voice communications links or telephony-based voice communications links over the PSTN.

Another aspect of the invention can include an IM comprising header information identifying a sending node and a recipient node, a message portion displaying content from the sending node to the recipient node, and a voice conference identifier. The

voice conference identifier can include a voice conference call list specifying conference call nodes to be connected via a voice conference call, wherein the recipient node is a conference call node. The IM further can include embedded computer program code. The computer program code can be configured to establish a plurality of voice communications links between selected ones of the specified conference call nodes thereby establishing the conference call.

Yet another aspect of the invention can include an IM/chat session client comprising a conventional IM processor. The conventional IM processor can extract and display message text encapsulated in a received IM. A voice conference processor also can be included. The voice conference processor can identify a voice conference identifier encapsulated in the received IM, display at least one selectable icon in response to detecting the voice conference identifier, and responsive to a selection of the at least one selectable icon, establish a voice conference call between selected conference call nodes specified by the voice conference identifier.

BRIEF DESCRIPTION OF THE DRAWINGS

There are shown in the drawings embodiments which are presently preferred, it being understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown.

5 Figure 1 is a schematic diagram of a network based instant messaging or chat (IM/chat) system for use in the present invention.

Figure 2 is a block diagram of an IM/chat client processing an IM configured with a voice conference feature in accordance with the inventive arrangements.

10 Figure 3 is a block diagram of an exemplary IM/chat client in accordance with the inventive arrangements.

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DETAILED DESCRIPTION OF THE INVENTION

The present invention provides an instant messaging or chat (IM/chat) communications method and system for processing an instant message (IM) which has been configured in accordance with the inventive arrangements. A voice conference identifier can be included in an IM sent by a sending node. The voice conference identifier can include a voice conference call list specifying voice conference call nodes. When a voice conference identifier has been included within an IM, a recipient node of the IM can detect the voice conference identifier. In addition to displaying message text contained in the IM, an IM/chat client at the recipient node can display one or more selectable icons. Responsive to the selection of one or more of the icons, a voice communications link can be established between the recipient node and selected specified conference call nodes. Notably, the sender of the IM can be included within the identified conference call nodes. The voice communications link can be a Voice over IP (VoIP) based voice communications link over the computer communications network, or a telephony-based voice communications link over a public switched telephone network (PSTN).

An exemplary network based IM/chat system according to the invention is shown in Figure 1. A first IM/chat client 65 in a sending node 10 and a second IM/chat client 70 in a recipient node 14 are shown although the invention can be utilized with any number and configuration of IM/chat clients acting as both sending and recipient nodes. In one exemplary case illustrated in Figure 1, IMs can be transmitted and received by the first IM/chat client 65 over a computer communications network such as the Internet 24 through an IM/chat server 18. Similarly, IMs can be transmitted and received by the second IM/chat client 70 over a computer communications network such as the Internet 24 through the IM/chat server 18. The invention, however, is not limited to a particular IM/chat server configuration and one or more IM/chat servers can be used by both the first and second IM/chat clients 65 and 70 to send and receive IMs.

Once received, an IM can be parsed and the contents 32 can be displayed in the IM/chat client 70 as is well-known in the art. Information pertaining to the identity of the

5 sending, recipient, and conference call participants, as well as the sending, recipient, and conference call nodes can be extracted from the IM and optionally displayed in the IM/chat client 70. Other pertinent data also can be extracted from the IM and optionally displayed in the IM/chat client 70. Examples of pertinent data can include references to the sending node and one or more recipient nodes such as network IP addresses. Pertinent data also can include a message subject and transmission date and time information.

10 Importantly, a voice conference identifier can be included in the IM to indicate that a voice communications link can be established between a plurality of conference call nodes. For example, the voice conference identifier can include a voice conference call list specifying the conference call nodes as a separate data source. Alternatively, the voice conference call list can include references to one or more conventional IM fields such as "To" or "From". Also, if the IM provides other fields such as "CC" (carbon copy), and "BC" (blind copy), those fields, as well as any other fields provided within the IM header can be referenced. Regardless, the voice conference identifier can specify a plurality of conference call nodes 28 such that voice communications links can be established between the conference call nodes. It should be appreciated by those skilled in the art that the recipient node 14 and the sending node 10 can be included within the conference call. Accordingly, conference call nodes 28, as used herein can include the recipient node 14 and the sending node 10 if so specified within the voice conference call list. Further conference call nodes 28 can include other nodes in the computer communications network to be included in the conference call.

20 Upon receipt of an IM, the IM/chat client 70 can detect the voice conference identifier when parsing the IM. Responsive to detecting a voice conference identifier in the IM, the IM/chat client can display a selectable voice communications icon 36 which can indicate to an IM recipient that voice communications links can be established between the conference call nodes specified within the voice conference identifier. The icon 36 can be displayed within the present message text 32, although alternative

placement of the icon 36 is possible. The icon 36 can be any suitable text or graphic symbol, but preferably represents voice communications to a typical viewer.

Selection of the icon 36 by a viewer or receiving party can cause the establishment of multiple voice communications links between the specified conference call nodes 28 thereby resulting in a conference call. In particular, though the voice communications links can be provided through any suitable voice communications technology, in one aspect of the present invention, a voice communications link 40 can be provided over the Internet 24 based upon the VoIP protocol. In another aspect of the invention, a voice communications link 44 can be provided using a conventional telephony link 44 provided by conventional telephony gateways 54A and 54B over a PSTN 50.

In another embodiment of the invention, the IM/chat client 70 can display a plurality of selectable icons 36 wherein each selectable icon can correspond to a particular conference call node. Accordingly, responsive to the selection of each icon 36, a voice communications link can be established between the recipient node and the conference call node corresponding to the selected icon as well as with other conference call nodes having an established voice communications link with the recipient node. Alternatively, responsive to selection of two or more icons, voice communications links can be established between the conference call nodes corresponding to the selected icons.

Figure 2 is a block diagram which illustrates an exemplary process sequence in an IM/chat client configured in accordance with the present invention. In particular, as shown in Figure 2, an IM 50 can be configured with a voice conference identifier 56. IM/chat client logic 60 can process the IM 50 so that the message text 32 can be displayed in the IM/chat client 70. IM/chat client logic 60 also can process the IM 50 so as to detect the voice conference identifier 56 and to responsively provide a selectable icon 36 in the IM/chat client 70.

More particularly, in accordance with the inventive arrangements an IM 50 can be configured to include a message header component 50A which can encapsulate a

reference to at least one of a sending node in the network and a recipient node in the network. The IM 50 also can be configured to include a text message component 50B which can encapsulate message text 32. The message text 32 can be extracted from the IM 50 and displayed in a message client 70. Finally, the IM 50 can be configured to include an attachments component 50C which can encapsulate message attachments in addition to the voice conference identifier 56.

Notably, the voice conference identifier 56 can include basic information denoting the ability to establish voice communications links with specified conference call nodes. Notwithstanding, the invention is not limited in this regard and in an alternative aspect of the invention, the voice conference identifier 56 can include an executable voice communications link program component. When executed, the voice communications link program can establish a voice communications link between the specified conference call nodes.

As will be apparent to one skilled in the art, the voice communications link program component can be implemented using not only a scripting language such as Javascript or VBScript, but also the voice communications link program component can be a compiled object whose binary representation is included in the IM 50. In that case, when extracted from the IM 50, the compiled object can be independently executed without requiring intermediate script interpretation. Finally, it will be apparent to one skilled in the art that the voice communications link program can be a reference to a program residing elsewhere in a computer communications network. Selection of the reference can cause the program to be downloaded and executed in the recipient node.

Returning now to Figure 2, IM/chat client logic 60 associated with the IM/chat client 70 can process the IM 50, first by parsing the contents of the IM 50 in an IM parsing component 60A. In particular, the message text 32 in the IM 50 can be extracted from the IM 50 using body processing component 60B. Likewise, header information such as the address of the sender and recipients, can be extracted from the IM using header processing component 60C. Finally, attachments included in the IM 50 can be processed in the attachment processing component 60D.

As shown in Figure 2, a voice conference processor 60E can be provided for use in the IM/chat client logic 60. The voice conference processor 60E can detect the presence of the voice conference identifier 56 encapsulated in the IM 50. Responsive to detecting the voice conference identifier 56, the voice conference processing component 60E can cause the placement of a selectable icon 36 in the IM/chat client 70. Subsequently, the selection of the selectable icon 36 can cause the establishment of voice communications links between the specified conference call nodes. Notably, the establishment of the voice communications links can be achieved through program code provided by the IM/chat client 70, by a plug-in to the IM/chat client, by the IM 50 itself, or by remote code referenced by either the IM/chat client 70 or the voice conference identifier 56.

The identity information required to establish the voice communications links can be provided in the message header component 50A. Still, the invention is not limited in this regard and the message header component 50A can merely contain a reference to the sending node, recipient nodes, or even other conference call nodes, which, in of itself, can be inadequate to establish voice communications links. In that case, the reference can be used to retrieve the required information. For example, the reference can act as a key to a directory lookup service such as an LDAP database. Using the key, suitable identity information can be retrieved, such as IP addresses and telephone numbers, with which voice communications links can be established.

Though only a single selectable icon 36 is shown in Figure 2, the invention is not so limited. Accordingly, Figure 3 is a block diagram of an exemplary IM/chat client in accordance with the inventive arrangements having a plurality of selectable icons 36A, 36B, 36C, and 36D, as well as contents 32. Based upon recipient and recipient node information extracted from the message header component 50A, or the voice conference identifier as specified herein, corresponding selectable icons 36A - 36D can be provided. Alternatively, the icons can be included within the IM. The selectable icons 36A - 36D can include a reference to a corresponding conference call node such as an appropriate text label. Responsive to the selection of the selectable icons 36A -

36D, a voice communications link can be established between one or more corresponding conference call nodes. For example, in the case where a user selects one of the plurality of selectable icons, a communications link can be established between the recipient node and the conference call node corresponding to the selected icon. Accordingly, upon selection of a second selectable icon, a voice communications link with the conference call node corresponding to that selected icon can be initiated such that a conference call results between the recipient node and the two selected conference call nodes. Where two or more icons are selected, a conference call can be established between conference call nodes corresponding to the selectable icons. Notably, the sending node and recipient node can be included in the conference call if so specified. In this manner conference calls can be established for all sending/recipient nodes, or for selected groups of sending/recipient nodes such as only those recipient nodes in a given department, or for other conference call nodes specified in the voice conference call list. In another embodiment, each icon of the plurality of selectable icons 36A - 36D can correspond to a conference call connection with an identified group or class of conference call nodes, for instance departments or product design teams.

The present invention can be realized in hardware, software, or a combination of hardware and software. Moreover, the present invention can be realized in a centralized fashion in one computer system, or in a distributed fashion where different elements are spread across several interconnected computer systems. Any kind of computer system or other apparatus adapted for carrying out the methods described herein is suited. A typical combination of hardware and software can be a general purpose computer system with a computer program that, when being loaded and executed, controls the computer system such that it carries out the methods described herein. The present invention also can be embedded in a computer program product, which comprises all the features enabling the implementation of the methods described herein, and which when loaded in a computer system is able to carry out these methods.

Computer program in the present context means any expression, in any language, code or notation, of a set of instructions intended to cause a system having an information processing capability to perform a particular function either directly or after either or both of the following: a) conversion to another language, code or notation; b) reproduction in a different material form.

Significantly, this invention can be embodied in other specific forms without departing from the spirit or essential attributes thereof, and accordingly, reference should be had to the following claims, rather than to the foregoing specification, as indicating the scope of the invention.

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